

November  
1984

11/84

L.I.S.T.ING

LIST GROUP  
PO Box 438  
Centerport, N.Y.  
11721-0438

MEETING NOTES (October 28, 1984)

I. Old Business

- a) See issue 10/84 for last meeting notes.
- b) LICA Membership.

The consensus opinion was that we could see no significant benefit from immediate LICA membership. If we have enough (or almost enough) members who wish to join LICA, as individuals, the matter will be reopened. In the meantime, newsletter exchange will continue and LICA meeting schedules will be posted in LISTing.

LICA meets 3rd Friday of each month at 8:00PM Room 508, Bldg. 500 at New York Institute of Technology, Old Westbury. Contact Al Levy at PO Box 71, Hicksville, N.Y. 11902.

Remember that LICA has Sig's for most computers, so if you have another make, you might join one of those.

II. Secretary/Treasurer Report

The treasury is in good shape and we still anticipate a small "dividend". Members should consider what sort of public service could be performed. Membership continues to grow with 8 new members being added since last month. Approximately 25 complimentary copies of the newsletter were distributed last month.

A P.O. Box has been rented at a cost of \$20.00/year. Chuck R. was given \$10.00 to purchase blank library tapes.

III. New Business

a) Software Library

Chuck R. will be making the "loop" copies of Library tape #1 (Version 1.7). The tape now contains about 2 X as much material as version 1.0. The tapes should go out by early December.

- b) Bob M. Will again update our membership data base. It's on TS/1000 ZX PRO/FILE.
- c) A subscription to 16/48 was approved. (This is a Spectrum Magazine). Other publications donated by members, are available, as well, during the meeting. Corresponding members please note: postage on the U.K. magazines (and possible damage) precludes their being circulated.
- d) Dues Structure  
Printing costs as well as mailing costs (now \$.37) are increasing rapidly. A dues increase to \$15.00, effective 1 Feb '85, was tentatively approved. (The 1984 balance, even if carried over, would not cover all costs). Foreign Subscribers rates will depend on postage, with a base cost of \$1.00/issue, plus applicable postage.
- e) General
  - 1) Complaints relative to newsletter legibility continue, though at a greatly reduced rate. We make an effort to provide legible copy, but are constrained by the quality of both the original material submitted and our copying machine. Time does not permit us to retype listings. Please don't use Timex paper unless that is all you have.
  - 2) Herbert W. noted that besides Zebra's excellent BBS for Timex users, you can also get in touch with other TS owners thru:
    - FAM 200 (Family Computing Magazine's SIG) Compuserve
    - CEM 450 (Computers & Electronics SIG) Wednesdays @ 10PM

Stewart noted that the Zebra BBS has had over 3000 calls from some 500 people. Note however, that the board will be down weekdays (9AM - 5PM) through Xmas.

3) A plea for 2068 hardware standards was made. The concept that even the address lines should be buffered in both directions (for DMA) was discussed, as well as the use of port numbers (e.g., 7E, 7F for Modems)

4) It was noted that most British Publications take overseas subscriptions. The rate runs about \$40.00/year airmail, much less by surface.

IV. Next Meeting

Will be at Heinz H's - 9 Dartmoor, Northport, N.Y. @ 2PM. A map, directions and Heinz's phone number are given on the "members only" page.

The formal portion of October's meeting adjourned at 3:30PM.

V. Demos

- a) Nazir showed us the DK'Tronics light pen, for the Spectrum. It's apparently I/O mapped and works, just fine, on a 2068. (So does a "true" Kempston Joystick - Ed.)
- b) Jeff S. Worked for 3 weeks to produce the software for Zebra's graphics pad. Jeff demoed the system, which uses Zebra's A/D interface, a KOALA pad and the 2068, and all were very impressed with the capabilities of this package. Price, to members, should be under \$100, depending on Zebra's contract with KOALA. See the press release, inside.
- c) Another attempt at using "firstLoadr" failed. Remember to NEW before trying to load your ZX program. And of course, volume is critical. An uploaded, but not fully functional, version of MEMORY (one of the demo programs which came with your TS 1000) is on the Library tape, Version 1.7.
- d) Bob Gilder demoed his "ROM MODULE" which uses commonly available (Radio Shack) parts, to build a ROM-switching device. The construction plans are in this issue.
- e) Chuck R. demoed his machine code checker program, a great technique for scanning (& changing) whole chunks of memory locations quickly.
- f) S. Newfield showed us the OKIData Color Printer, \$149.00. He's looking for someone to design an interface for TS 2068. Has anybody out there made an ATARI - or COMMODORE-to-TS/2068 serial adaptor? Interfaces for the OKI "10" and those machines are available for about \$50.00, already.
- g) Next Time - Theme for December meeting - Business Applications: e.g., Communications/WP

PI

L.I.S.T.ing

November 1984

12/84

ITEM	PAGE
Meeting Notes .....	1
Index.....	2
Hardware Review.....	3
ROMSWITCH (P. Donnelly)	
Software Special.....	4
HEADER-READER (N. Pashtoon)	
Catalogs Received.....	5
HEX-DEC CONVERSION	
TECHNICAL-TIPS-TS1000	
Hints & Tips.....	6
TAPE HEAD ALIGNMENT (P.J.D.)	
FUN 'N' GAME.....	7
HORSERACE (R.Cunningham)	
BLACK MASK REVISITED	
Communications Corner (Modems).....	8
Graphics Tablet.....	9
Hardware Special.....	10-11
ROM MODULE (R.Gilder)	
Spectrum Software.....	12
(D. Dewey)	
Letters.....	13-14
Members Only.....	15

@Copyright 1984 by LIST & the original author.  
Permission to republish the material in this  
newsletter is reserved to the original author  
and LIST may be obtained, in writing, from  
either one.

NOTE: PARTIAL YEAR MEMBERSHIPS AVAILABLE

Normal membership year is Feb. through Jan. at costs of \$12.00.  
By keeping as many members as possible on that basis, we keep  
our costs and chances of error, down.

If you wish to begin subscribing later in the year, please sign  
up for the end of this year and all of next. E.g., to subscribe  
in Nov. 84, we ask that you remit \$16.00, which will cover you  
through Jan'86, rather than send 4.00 now and 12.00 in Jan.  
(the rates may go up then also)

We will accept partial years or different subscription runs,  
on a limited basis (particularly from members outside the U.S.).  
But, please be aware that, in addition to possible rate increases,  
your "account" must be handled "by hand" and errors may occur.

Newsletter Policy

- The result of a series of voice votes has established our newsletter policy. Specifically:
- 1) Requests for information providing an SASE, will receive 1 copy of the current newsletter, at once. Further requests will not be honored from the same individual.
  - 2) Requests not providing a SASE will be held for reply by the corresponding secretary or another officer. While we are non-profit, we would also like to be "non-loss" and cannot afford extensive free mailing. It was decided however, that in the public interest, a copy of a newsletter (probably an excess and/or obsolete issue) would be sent to such inquiries.
  - 3) The individual newsletter price to non-members will be \$1.00, plus postage
  - 4) Requests from bona fide user groups will be honored as long as newsletter exchange continues (we currently correspond with 4 groups).
  - 5) Members who join during the current club year, will pay full dues: \$12.00, and receive all back issues to the beginning of the club year (February to January). A member joining in September 84, then, would receive seven back issues as well as issues for September '84 through January 85.
  - 6) Advertising It was decided that LISTing will accept paid advertising if asked. We will not solicit ads. Any funds obtained in this way will be kept separate from the general fund and their use will be voted upon separately.

LONG ISLAND  
LIST GROUP  
Inc. Inc. Inc.  
T MEX

NEXT MONTH IN LISTING:

- 1) Hardware Reviews - a) Kempton Joystick  
For the 2068 (Spectrum)  
b) Zebra Joystick  
For the 2068 (Spectrum)
- 2) Checkbook Reconciler Program
- 3) Nazir's Cross Referenced ROM's  
(we hope)
- 4) Your Article, program or letter
- 5) A Listing of the programs on LISTAPE #1.7

Please note our new address - P.O. BOX 438, Centerport, N.Y. 11721-0438  
Mail sent to the old address must be forwarded there and will take  
longer to reach us.

## HARDWARE REVIEW

PRODUCT: ROMSWITCH  
FUNCTION: SPECTRUM COMPATABILITY  
FOR: TS 2068 ONLY  
FROM: RUSSELL ELECTRONICS  
RD #1 BOX 539  
CENTRE HALL, PA. 16828  
PRICE: \$55.00

As most 2068 owners probably know by now, you can gain access to the hundreds of Sinclair Spectrum software titles available for the U.K., by changing your 2068's ROM (Read Only Memory). This can be done in a number of ways, and one, quite elegant, method is the use of Russell Electronics' Romswitch.

Romswitch is a small (2"x2") double-sided P.C. Board on which is mounted a Spectrum 16K ROM chip, a glass-encapsulated, miniature magnetic reed switch, a pair of pullup resistors, and a socket for your 2068 Home ROM. The board layout is straight-forward, with a one pin offset between the chips allowing for clean trace runs. Despite the use of one short jumper, the plated through holes on this board indicate a desire for high quality design and construction. In fact, Bill Russell tells me that he has rejected more lots of boards than he has accepted, so far, in order to maintain the required standards. The final component of ROMSWITCH is a small "button" magnet mounted on an adhesive backed slide. We'll talk about how that functions later.

Installation of ROMSWITCH requires only a Philips and regular (slotted) screwdriver. It involves opening your 2068 case to install the board in the 16K ROM socket. The procedure is simple and is described in detail in the accompanying 3 pages of documentation. Having installed several Spectrum ROM's myself, I think I can say that the documentation is quite complete and should allow virtually anyone, with a reasonable amount of manual dexterity, to perform the installation.

After installation of the ROMSWITCH Board inside your computer, you must install the button magnet "switch" on the top side of your keyboard. I had to experiment a little with placement of this switch. But, as you can move it around to your hearts content, prior to removing the adhesive backing, it should pose no serious problem in mounting. In fact, if you listen very closely, you can actually hear the contacts close as the magnet is brought close to the switch assembly. Try this outside the machine first, so you know what to listen for.

Once the "switch" is installed, you can switch back and forth from Spectrum to TS 2068 (with the power off only!) to your hearts content. This is the singularly outstanding feature of ROMSWITCH over the other conversion methods. With Doug Devey's EMU-1 (Chameleon) you must insert and remove the cartridge board, each time. With simple ROM replacement, you'd have to open back up the computer and reinstall the TIMEX ROM.

Each method has its pros as well as cons, though. The Chameleon, for example, requires no tools and leaves your warranty valid, while direct ROM replacement needs tools, like ROMSWITCH, but costs less than \$20.00. Meanwhile, ROMSWITCH gives you a way to switch back and forth, without opening and closing anything and without drilling a hole in the case for a switch.

## PRO/FILE UPDATES

Here's an excerpt from the latest issue of Tom Wood's updates publications

Pro/file Updates is published 4 times a year, in January, April, July, and October.  
Subscription rate is \$9.95 annually.

Edited and Published by:

Thomas B. Woods  
P.O. Box 64, Jefferson, NH 03583  
(603) 586-7734

Copyright 1984 Thomas B. Woods

## LIST GROUP

The one weakness of the ROMSWITCH is that same magnet "switch", or rather its adhesive backing. I found that mine started to slide around the case after a while. Make sure you really clean the intended application spot well before application and even then, keep your fingers off the switch when the power is on. This shouldn't be difficult as it is the only "key" which slides to work, rather than being depressed. The actual magnetic switch is "snap action" and if the magnet is too far away will always "come up" in one mode (TS 2068 with my version) or the other.

The only other minor turn-offs with ROMSWITCH are that the Spectrum ROM is soldered in and has pin 27 cut off, making it difficult to reuse either the ROM or the board. Also, you will be using just a little more power with ROMSWITCH installed, as both chips will draw juice. This last is true of the EMU-1, as well.

Overall, I give the ROMSWITCH a 9 out of 10. Quality and convenience are high, but so is price. I'd also like to see a kit and/or "bare board" version made available. ROMSWITCH is a viable contender in the field of "SPECTRUMIZING" your 2068, and may just be what you're looking for.

@Copyright 1984  
P. Donnelly

P.S. While I strongly recommend that you do not flip the switch with power on, I tried it anyway. No harm done (except loss of program), but you might initiate bus contention during contact bounce and that could lead to losing a chip. A report from the West coast indicates they may have had problems this way. Also, don't forget that SPECTRUM ROM's often (about every other time) get hung up during initialization. If this happens, restart your machine.

P.S.S. One more thing, which I didn't have time to check out before press-time, is the effect of that magnet on your tapes. I noted, to my horror, that while using my nearby TS1000, I had placed a prerecorded tape on the 2068, right on top of the magnet. I'll report on any damage this might have done after I 'acope' the tape output, in the next issue of L.I.S.T.ing.

Suffice to say, everything should be safe enough if you don't put tapes on your computer. This is not a good practice anyway, because of the magnetic fields already produced by the machine.

## PRO/FILE UPDATES

I am about to launch a new subscription drive. My goal is to boost circulation over the 1000 mark. I'm asking you for some help in accomplishing this. If you ever "shared" a copy of ZX Pro/File with a friend, ask them if they'd like to subscribe to Updates. You know and I know that they are missing a lot if they don't get it.

If you always guarded your Pro/File and directed anyone who asked for a copy to get one from me, I appreciate the respect you have for my work. But now I'm going to ask you, why not cut a copy for a friend or two. Show them an issue of Updates so they can see how much more they will get if they subscribe to the newsletter. The result is that everybody wins. Friends get a free copy of Pro/File, I get a new paying subscriber, and you get a newsletter that is financially sound, widely read, and able to provide you with articles from a broad range of reader interests.

## Z80 CHIP REPLACEMENT UPDATE

Many readers reported that last issue's suggestion to replace the Z80 microprocessor chip inside the computer to solve unexplained crashing problems works.

Tom Bent, the illustrious editor of SyncWare News suggests that the Z80B processor chip is a much beefed up version of the Z80A. It costs a little more, but is able to handle severe loads on the bus.

The Z80B is available from Jameco Electronics, INC., 1335 Shoreway Rd., Belmont, CA 94002 (Phone: 415-392-8097) Price is \$9.95.

The Z80 chip is plugged into a socket on the TS1000 circuit board. Replacing it is a simple matter of pulling the old one out and plugging the new one in.

While it is impossible to guarantee that this procedure will solve your specific problem, it is, for the cost, worth a try. Who knows, maybe you'll get lucky!

# 

## 

You can use this program to see the "header" information which tells your computer what's on the tape its about to get.

Just enter this program and RUN. Then take the tape you'd like to analyse and play it into your computer. As soon as the header finishes, VIOLA! a description of the program, or code, will appear on the screen.

There are separate versions of the program for TS 2068's and Spectrum. Make sure you use the right one.

### TS 2068 VERSION

### SPECTRUM VERSION

```

10 REM PROG5. HEADER READER
20 REM © NAP AUG. 10, 1984
30 CLEAR 32768
40 LET J=32765 LET head=J+15
50 DEF FN g(X)=PEEK X+255+PEEK
(x+1)
60 RESTORE
70 FOR n=0 TO 44: READ code
80 POKE (J+N), code: NEXT n
90 DATA 62,0,55,221,33,42,128,
17,17,0,243,245,219,255,203,255,
211,255,219,244,50,41,128,62,1,100,
11,244,241,205,252,0,58,41,128,200,
11,244,219,255,203,191,211,255,2
51,201,0
100 CLS
110 POKE head,4
120 PRINT AT 10,8;"start the ta
pe"
130 RANDOMIZE USR J
140 CLS: LET hdtype=PEEK head
150 IF hdtype=4 THEN GO TO 1000
160 LET h$=""
170 FOR n=1 TO 10
180 LET h$=h$+CHR$ PEEK (head+n)
190 NEXT n
200 PRINT "Prog. Name > ";h$
210 PRINT
220 LET a$=head
230 LET h$len=FN g(a+11): LET h
$adr=FN g(a+13): LET h$vars=FN g
(a+15)
240 LET vars=h$len-h$vars
250 IF hdtype THEN GO SUB 500:
GO TO 1010
300 PRINT "Program is in BASIC"
: PRINT
310 PRINT "Program area >";h$dv
ars;" bytes"; PRINT
320 PRINT "Variables area >";v
ars;" bytes";PRINT
330 IF h$adr>10000 THEN PRINT "
There is no autostart!": GO TO
1010
340 PRINT "Line # for autostart
>";h$adr: GO TO 1010
500 LET b$=""
510 IF hdtype=1 THEN LET b$="Nu
mber array"
520 IF hdtype=2 THEN LET b$="Ch
aracter array"
530 PRINT "Program is a ";b$:
PRINT
540 IF hdtype=3 THEN PRINT "Bin
ary code ,start adr >";h$adr: PR
INT
550 PRINT "Block length is >";
h$len;" bytes"
560 RETURN
1000 PRINT FLASH 1;AT 10,8;"This
is not a tape header"
1010 PRINT FLASH 0;AT 19,1;"Are
you game for another try?(Y/N)"
1020 PAUSE 0: IF INKEY$="Y" THEN

```

```

10 REM PROG5. HEADER READER
20 REM © NAP AUG. 10, 1984
30 REM CLEAR 32767
35 CLEAR 27999
40 REM LET J=32768: LET head=J
+42
45 LET J=28000: LET head=J+14
50 DEF FN g(X)=PEEK X+255+PEEK
(x+1)
60 RESTORE
70 REM FOR n=0 TO 41: READ cod
e
75 FOR n=0 TO 13: READ code
80 POKE (J+n), code: NEXT n
90 REM DATA 221,33,42,128,17,1
7,0,243,245,219,255,203,255,211,
255,219,244,50,41,128,62,1,0,11,0
44,241,205,252,0,58,41,128,211,0
44,219,255,203,191,211,255,251,2
01,0
95 DATA 55,62,0,221,33,110,109
,17,17,0,205,86,5,201

```

## LIST Group

LOW INCOME  
SCHEDULE TIME  
GROUP

P.O. Box 128  
Cambridgeport, N.Y. 11721

Dear LIST member:

This is a chain letter. However, it's like none you've ever received before. This one provides something of value right away.

As you know, several of our members are "correspondence only", meaning they cannot attend our monthly meetings. Those of us who normally attend can't make every meeting either for various reasons, as well, and finally, we've noted that a lot of meeting time is wasted as members exchange their home-made software or make selections from our library of public domain software.

In an effort to get the widest distribution possible and save valuable time, I've come up with this "Round Robin" software exchange. Attached, you will find two cassette tapes. One contains library tape #1, the other is a blank C-60. Please make your own copy of library tape #1 (this way you'll be using your equipment and your time only).

Next, we request that you add a copy of some program you have to the blank cassette. Please put at least one program on the cassette, and feel free to use up to 15 minutes worth of tape if you want to share more. You should provide at least some rudimentary documentation for the program(s) and note the source (e.g., your own work, a friend, copied from a magazine, etc.). Also tell us whether the program is for TS 2068, TS 1000 or Spectrum. Make sure you advance the "blank" cassette past the last members contributions before you start to add to it. Again, you should put at least one working program on the cassette (length is immaterial, as is subject matter). You may put a non-working program on the tape, as well, if you'd like to have the rest of our "experts" try to solve a problem. Again, provide all the documentation you can to help our troubleshooters.

Commercial program copies may be submitted as secondary programs, also, but under the following restrictions.

- 1) The copy is the only one you make (for now).
- 2) You do not use the original until the copy is returned to you (or we tell you it has been destroyed).

In this way, we should not be violating anybody's copyright and each of the other members in your "loop" gets to provide an interesting piece of software. If it is a really interesting program and/or time permits, someone down the line will review it for LISTING.

Each "loop" will consist of 3 group members and home base ( P.O. BOX 128 , for now). Please try to keep the tapes for less than 1 calendar week and then forward them to the next member in your loop. Cross your name off the loop list as you do so. The choice of postage rate is up to you (but remember, we'll run the loop backwards, sometimes). One-way Postage, by the way, is the only expense involved in this scheme, so it is the lowest cost alternative I could think of.

As programs accumulate, we will create library tapes #2,3,etc. (from yours and other loops), and continue the procedure. We will move people between loops at their own request, or as they express interest in different types of programs. I see this as the framework from which we can establish SIC's (special interest groups) within our club. Examples of SIC's would be: TS1000 only, Chess and strategy game players, Spectrum only, Arcade games, business, astronomy, etc. Of course, if you want to drop out of your loop or the program as a whole, simply note it on your forwarding form and send it along. The only cost will be the one-time, one-way postage. (If you have a problem with that, drop me a line and I'll figure something else out).

I see this as a great and relatively inexpensive opportunity to exchange information and get to know each other. We would appreciate your comments on how well the system works (or doesn't) and what further improvements we could make.

Your first loop list is attached. Hope to hear from you soon.

Very truly yours,

*Paul Donnelly*  
Paul Donnelly  
LIST

P.S. Library tape #1 is all TS 2068.

## FLASH!

It has come to our attention that one, or perhaps two of the library tapes (a copy of 1.6 and one of 1.7) may have the wrong "tower" program..... If the copy you received has any other program besides "Tuerme Von Hanoi" (towers of Hanoi, in German), please do not use it. The other program was placed on the tape, in error.

## LIBRARY TAPE

We still need documentation for the programs members have written themselves. There were complaints about the lack of same during the last meeting. However, consider the following:

- 1) Part of the fun of "playing" with our computers is the joy of discovery. Few of these programs cannot be figured out, with the help of the manual or a call to a friend.
- 2) There may be some members who don't subscribe to the original publication in which the program appeared. In most cases, if you don't have the magazine (book etc.), you probably won't be able to use the software.

3) Translated programs (e.g., from Microsoft Basic) require even more support, in that they may contain "offbeat" programming techniques and solutions which can be of help to the novice only if thoroughly explained.

P4

## CATALOGS RECEIVED

## VENDOR

John Oliger Co  
11601 Whidbey Drive  
Cumberland, In. 46229

WHJ Data Systems  
4 Butterfly Drive  
Hauppauge, N.Y. 11788

Bioical Software, Inc.  
167-C Wilson Street  
Petaluma, Ca 94952

Computer Classifieds  
PO Box 344  
Leola, Pa 17540

Memo Tech  
99 Cabot Street  
Needham, Ma 02194

## PRODUCTS

2068 User Cartridge  
2068 Expansion Board  
2068 Eprom Programmer

Business Programs ('68 x 1000)  
Quicksilver Games (2068)

Backgammon  
Checkbook  
Stock Market Game

Buy, sell & Trade  
Computer related  
Items - All Classifieds

Trade in your Timex or  
Memotech Peripherals for  
their new computer!

## CONVERSION TABLE OF HEXADECIMAL TO FF, OR 255 IN DECIMAL

HEX	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
B	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

## CONVERSION OF HEXADECIMAL TO FFFF, OR 65535 IN DECIMAL (with above table)

Hexadecimal	Decimal	Hexadecimal	Decimal
100	256	1000	4096
200	512	2000	8192
300	768	3000	12288
400	1024	4000	16384
500	1280	5000	20480
600	1536	6000	24576
700	1792	7000	28672
800	2048	8000	32768
900	2304	9000	36864
A00	2560	A000	40960
B00	2816	B000	45056
C00	3072	C000	49152
D00	3328	D000	53248
E00	3584	E000	57344
F00	3840	F000	61440

## ZX/81/TS 1000 TECHNICALITIES

## ZX81/TS 1000

Here's some ZX/TS 1000 technical info we received in exchange for our newsletters. Three's more and it will be available at the next meeting. This came from Jess Peeler, in Costa Rica.

## Technical Comments relating to Sinclair ZX-81 and Timex-1000 Computers and 16K External RAMs (Based upon observation of approx. 25 each.)

P.C. Boards are identified as issue 1 or issue 3. Both versions are found in ZX-81s/only issue 3 is used in Timex. Electrically, they are almost identical. Issue 3 is an improved layout with neater appearance.

ZX-81s have I.C.s mounted in sockets. Timex versions hard-solder their RAM chips in place.

All ZX-81s were built in England or sold in kit form. Most Timex were built in Portugal, but some were built in France.

Quality control was highest on ZX-81s. Poor quality control was observed on Timex units, particularly those manufactured in Portugal. Fabrication defects most observed were faulty installation of the flexible P.C. "fingers" from the keyboard into the special sockets. This defect has been observed in almost 100% of Timex units manufactured in Portugal. Un-soldered or incompletely soldered ground busses were observed in both Portuguese and French units.

I.C.s: All units use an SCL (Sinclair Computer Logic) special purpose chip manufactured by Ferranti - ULA2C184E. (Ferranti will not even acknowledge letters requesting info or cost)

All units use a D2364C ROM

CPUs vary. ZX-81s have NEC P12308-151 or D780C-1. Timex uses 810g chips.\*\* All are 2-80A chips in one form or another.

RAMs, internal: Most variation is seen with the RAM. In the ZX-81, only 1K of RAM is built in. The P.C. board was cleverly designed to use either 2 ea 2114s or a single 4118. The 2114 is a 1K x 4 Static RAM, whereas the 4118 is a 1K x 8 Dynamic RAM.

Timex internal RAMs are all 2K, in various versions from different manufacturers, i.e., Toshiba 2016P-1, Motorola 20M 38818C, NEC D4016D-1, Toshiba TM 2016P-1.

Transistors: ZTX-313s are normally used. I have found uMPS-2369s mounted in one computer. Also, I found that an MPS-3563 works quite well as a substitute.

LOAD/SAVE modifications: Change R-27 to 27 kohms and C-11 to 0.015 mfd.

## 16K Ext RAMs

P.C. boards are identified as issue 1, 2, or 3. Issue 1 and 2 are composed of 2 small P.C. boards that are folded inside the case; differences between issues 1 and 2 are minimal - an additional diode and de-coupling capacitor. Issue 3 combines many logic functions in a single Ferranti ULA18035E chip to reduce I.C. chip count by 5 - and a single P.C. board is used, mounted in the same case. (Ferranti won't answer any questions on this chip, either)

Transistor is either a ZTX-750 or ZTX-752. Recent French and Portuguese units used either a 2N6727 or MPS-6727.

Wobble is often a problem - varies with units. The French units utilize a P.C. connector that has the tightest fit and, consequently, the least wobble of all units observed.

\*\* Unfortunately, ZX-80 and ZX-81 were chosen as names of Sir Clyde's first two computers. There is a tendency to confuse these designators with Z-80 and Z-80A, which are CPUs. Therefore, remember that Z-80A is a Zilog designator for their 4 MHz CPU.

Z I S T GROUP



# ALIGNMENT TAPE - SCREWING YOUR HEAD ON STRAIGHT

## ALIGNMENT

Here's a prototype for a TS 2068 tape head alignment program. We're filling an array, A\$, with first "" (or nothings) and then COPY (or 255). The idea is to get first a string of "0"s and then a string of "1"s onto our test tape. Note that 255 is FF(hex) or: 11111111 Binary.

You could make the program run even longer by DIMing A\$ to 30,000, or so. It should work for ZX81's too, but you'll have to DIM A\$ a bit smaller.

Enter the program, as shown, and then RUN it. The data has now been placed in array A\$. Now, using your most reliable tape recorder, SAVE the program a few times. (You could even do this from within the program, and use an autorun to make it "load", several times too). You have now created a tape which has data recorded on it by your "best" machine and you know what the data means. Did you notice the distinct pattern differences your new "alignment" tape made on the TV as you saved it?

When you play your tape back on another (suspect) machine observe the pattern for the same lines. If they don't look the same you know you have an alignment problem.

Adjusting the alignment is done with a small Phillip's head screwdriver. Put your alignment tape in your tape recorder and press "play". "LOAD" the program into your computer and observe the screen. With the player running, insert your screwdriver into the small hole next to (usually on the left of) the recording head and begin to adjust the screw first one way and then the other. The screw is often coated with a small amount of red "nail polish" to both secure it and show signs of tampering. Only small adjustments should be necessary.

If you have an oscilloscope, you will be able to see the actual data pattern and can adjust for maximum gain (~5 vpp). Next best is a "Wink-y Board", and its indicator LED. Finally, you could even use your ear to listen for the maximum sound level, as you turn the screw. Hook up an earphone in parallel with your computer using a "Y" adaptor in order to this. At least one of these methods should be used in conjunction with observing the loading pattern.

This tape will serve as a reference point for your system. If you ever have to realign your heads in order to load a tape, made on another machine, you can always get "back" to your ideal alignment using this tape. Do remember that the tape is made on your best machine and this still doesn't guarantee perfect "universal" alignment (i.e., with other peoples recorders).

```

1 DIM A$(30000)
10 FOR i=1 TO 1500: LET A$(i) = CHR$(0)
20 NEXT i
30 FOR i=1501 TO 3000: LET A$(i) = CHR$(255)
40 NEXT i
50 STOP

```

OR:

```

1 DIM A$(30000)
10 FOR i=1 TO 4500: LET A$(i) = CHR$(0)
20 NEXT i
30 FOR i=4501 TO 9000: LET A$(i) = CHR$(255)
40 NEXT i
50 STOP

```

The following Spectrum, Hints and Tips come from National Software Library 42 Harefield Road, Cheadle, Surrey, SM2 7NE, UK and were submitted by several of their members.

## \*\*MEMBER'S HINTS AND TIPS.\*\*

So many members have sent tips for the newsletter we would need 8 pages to list them all! It's been quite a job to try and check them all and pick out the tips to include. Our thanks go to ALL who have sent tips. All the contributions published will gain free hire vouchers for the respective member.

LET A=USR 3280 or RANDOMIZE USR 3280 or LET A=USR 3582  
Scrolls the screen display up one line, use a FOR-NEXT loop to scroll several lines.

LET A=USR 3330 Scrolls page to top line  
LET A=USR 3583 Scrolls bottom half page, one line.

LET A=USR 3852 Clears top half of screen

POKE 23562,1 Fast auto repeat.

POKE 23561,0 Disables auto repeat

INK 9 Sets INK to contrast PAPER colour

POKE 23736,181 When making multiple SAVES, eg with several blocks of data in a programme, add this instruction between SAVE commands. The SAVES will then be carried out automatically without the need to 'Press a key' between each one. It sometimes helps to also use a PAUSE command, as the programmes will be very close together on the tape.

RANDOMIZE n Is equivalent to POKE 23670,n-256\*INT (n/256),POKE 23671,INT (n/256) A useful short cut to those 2 byte calculations. PEEKing those addresses will provide the needed figures without any human intervention.

An interesting and rather 'pretty' bug exists in the way the DRAW command executes it's arc making facility. Try this short routine.

```

10 INPUT "Any odd number" in
15 CLS
20 PLOT 75,50: DRAW 100,100,PI*n
30 GO TO 10

```

Having RUN this programme, try adding the following line.

5 OVER 1  
Try INPUTting these numbers. 253,237,375,275,287,157, and EXPERIMENT!

POKEing the MODE system variable immediately before an INPUT command will change the character of the cursor. Try these.

POKE 23617,142 Pound sign £ (CHR\$ 96)  
POKE 23617,240 Dollar sign (CHR\$ 36)  
POKE 23617,252 Less than sign (CHR\$ 60)  
POKE 23617,253 More than sign (CHR\$ 62) followed by less than sign (CHR\$ 60)

POKE 23617,238 Flashing blank square

POKE 23617,223 Question mark

POKE 23617,190 The word USR (CHR\$ 192)

POKE 23617,192 The word BIN (CHR\$ 196)

POKE 23617,208 The word DATA (CHR\$ 228)

By interspersing a CHR\$ number between two strings for PRINTing interesting and useful relationships may be produced. i.e. PRINT "x";CHR\$ z;"y"

Set variable z as required, and change in the prog.

i.e. z = 6 is equivalent to PRINT "x","y"

z = 8 is equivalent to PRINT "x" then PRINTING "y" on top of it.

z = 9 is equivalent to PRINT "x";"y"

z = 13 is equivalent to PRINT "x";"y"

10 PRINT (((PEEK 23732-256\*PEEK 23733)+1)/1024)-18  
This PRINTs the memory size of your SPECTRUM exactly.

POKE 23624,120 Gives a BRIGHT window at bottom of screen (Lines 22 & 23)

PRINTing to the bottom two lines may be achieved with PRINT #1; AT 0,0; (text or variable) for LINE 22  
PRINT #1; AT 1,0; (text or variable) for LINE 23  
(This can be used up to PRINT #1; AT 22,31; )

PRINT #2; gives normal screen PRINTing, and PRINT #3; is the same as LPRINT. Therefore, the instruction PRINT n; can be included in a programme to give bottom line printing, normal screen printing or LPRINTing, depending on the value of 'n'. This saves time and memory.

LET t=7997-USR 7997 this gives the number of 50ths of a second it took for a key to be pressed. (Just PRINT t for the result)

For a = 0 TO 255: OUT 254,ASNEXT a This causes an interesting BORDER effect.

10 BORDER 1: BORDER 2: BORDER 3: BORDER 4: BORDER 5: BORDER 6: BORDER 7: BORDER 0: PAUSE 1: GO TO 10  
This also gives an interesting BORDER effect, try altering the length of the PAUSE.

LET a = USR 1278 gives a LOADING pattern. Try these other numbers as well. 1248,1251,1278,1301,1303,1305, 1306,1308,1312,1314,1315,1480,1491,1492,1498, etc. etc

LET a = PEEK 23613-2: POKE 23613,a This will disable the BREAK key.

POKE 23692,n ('n' = maximum of 255) This overrides the 'Scroll' message for 'n' times.

A tip to speed up the play in 'Murder at the Manor'

1. BREAK into the programme
2. LIST 330, and BREAK scroll
3. EDIT, and add at the beginning of LINE 330 RETURN
4. Type GO TO 80 and the game will be faster, by removing the colour paint routine in the graphics.

JET SET WILLY - a few tips.

Instead of LOAD "" use PERCE "" Stop the tape as soon as the leader programme is LOADED, then add whichever of the following POKEs you want into a new line 35. Then RUN, start tape again and play the game.

POKE 34785,n ('n' = the number of lives you want, up to 30)

POKE 34795,n ('n' = the screen number you wish to start)  
POKE 34794,0: POKE 34795,0: POKE 34795,0: POKE 34795,0  
POKE 34797,0: POKE 34798,0 (All these POKEs must be entered if you don't want to go back to the BATHROOM each time)

POKE 34809,0: POKE 34810,0: POKE 34811,0: POKE 34812,0  
POKE 34813,0: POKE 34814,0: POKE 34815,0 (Items collected will not re-set at the start of each game.)

MANIC MINER.

Bug-Byte version. Type PERCE "" instead of LOAD "" and add this line. 25 POKE 35136,0 (This will give unlimited lives.)

Software Projects version.

Again use PERCE "" but add the following POKE to line 10, before the RANDOMIZE USR VAL .....

POKE 36135,0 (this also gives unlimited lives.)

Finally, a routine to auto-run machine code starting at address mn.

10 CLEAR 85530: LET x=mn: POKE 85520,INT (x/256)

POKE 85527,x-256\*INT (x/256)

Our special thanks to Keith Gibb, Stephen Lewis, T. Mustafa, David Pickles, Ben Cons, Andrew Boissever, Peter

2068 bytes 38552  
bytes free 33592  
Prog.bytes 5060

## FUN'N GAMES

© R.J. Cunningham

### \* HORSERACE \*

PRESS ANY KEY TO BEGIN!

```

1 REM !VAL \ FREE !CODE \ RET
URN ? RETURN ?( ? THEN A
ND +UX?? ?PEEK #1?? IF RESTORE
!LEN \N ?1?? RESTORE !VA
L \ FREE NEW ?0??
? THEN ? THEN ?STRS RESTORE !
VAL \ ? FREE !LIST RETURNS
RETURN
2 DEF FN a()=PEEK 23635+256*P
EEK 23636+57
3 POKE 23660,30: CLS : GO SUB
15
4 POKE 23728,8: POKE 23729,3:
POKE 23723,3: RANDOMIZE USA FN
a()
5 BORDER 7: BEEP 2,15: REM "
HORSERACE "
6 POKE 23728,20: POKE 23729,4
POKE 23723,2: RANDOMIZE USA FN
a()
7 REM PAPER 2: "PRESS ANY KEY
TO BEGIN!"
8 DRAW 255,0: DRAW 0,175: DRA
W -255,0: DRAW 0,-175: PLOT 0,68
9 DRAW 255,0: PLOT 0,119: DRAW 2
55,0: PRINT AT 0,7: "© R.J. Cunni
ngham"
9 FOR i=1 TO 6: PRINT AT i,0:
OVER 1: PAPER 2: BRIGHT 1: "
N
EXT i
10 FOR i=11 TO 21: PRINT AT
i,0: OVER 1: PAPER 4: BRIGHT 1: "
NEXT i
11 REM !P 1-5: !CODE !PAPER 1
12 REM !P 1-5: !CODE !PAPER 1
13 REM !P 1-5: !CODE !PAPER 1
14 PAUSE 0: GO TO 9000
15 FOR x=0 TO 7: READ n: POKE
USA "x",n: NEXT x
20 DATA BIN 00000000,BIN 00000
000,BIN 10000110,BIN 01111111,BI
N 00111110,BIN 00111100,BIN 0101
0110,BIN 10101001
30 FOR x=0 TO 7: READ n: POKE
USA "x",n: NEXT x
40 DATA BIN 00000000,BIN 00011
000,BIN 00011000,BIN 10011010,BI
N 01111111,BIN 00111100,BIN 0011
1100,BIN 00111100
41 RETURN
42 REM !PAPER 5: !CODE
43 FOR x=2 TO 16 STEP 2
44 PRINT AT x,0:x/2: "

```

```

45 NEXT x
47 DRAW 255,0: DRAW 0,175: DRA
W -255,0: DRAW 0,-175
48 FOR y=31 TO 159: PLOT 248,y
NEXT y
50 FOR i=0 TO 21: PRINT AT i,0
OVER 1: PAPER 5: "
NEXT i
52 REM !PAPER 5: !CODE
53 READ d,p: LET d=d/18
55 IF P=999 THEN PAUSE 30: GO
TO 100
60 BEEP d,p: GO TO 53
70 DATA 3,1,2,6,2,10,3,13,1,13
,1,13,2,13,3,10,1,10,1,10,3,10,3
,6,2,10,2,6,5,1,4,69,4,69
80 DATA 3,1,2,6,2,10,3,13,1,13
,1,13,2,13,3,10,1,10,1,10,2
,1,2,1,2,1,3,6
90 DATA 999,999
100 PRINT AT 21,9: FLASH 1: BRI
GHT 1: PAPER 2: INK 9: "THEY'RE O
FF!"

```

Use Graphics "A" & "B" for the horses in lines 15 & 30 etc.

#### FROM THE PROGRAM

War of the Worlds  
This tune is played so  
often it'll put you to  
sleep.

```

350 PAUSE 10: BEEP .37,9: BEEP
.37,9: BEEP 1,9: BEEP .37,7: B
EEP .37,7: BEEP 1,9: BEEP .37,
9: BEEP .27,9: BEEP 1,9: BEEP
.37,9: BEEP .27,1: BEEP .35,2: B
EEP .2,0: BEEP .65,2: BEEP .17,
12: BEEP .17,14: BEEP .17,12: B
EEP .17,14: BEEP .17,12: BEEP 1,5
7,14

```

Here's Black Mask Again

```

10 REM THE BLACK MASK
20 RANDOMIZE
30 DIM P$(2,7)
39 REM INITIALIZE VARIABLES
40 FOR X=1 TO 7
50 LET P$(1,X)=CHR$ 32
60 LET P$(2,X)=CHR$ 128
70 NEXT X
80 LET P1=9
90 LET P2=22
100 LET U=1
110 LET Q=0
120 LET FL=0
129 REM DRAW LEFT AND RIGHT SID
ES OF MASK
130 FOR X=9 TO 22 STEP 13
140 LET P=4
150 FOR Y=2 TO 17
160 FOR Z=X-P TO X+P
170 PRINT AT Y,Z:CHR$ 143
180 NEXT Z
190 IF Y<4 THEN LET P=P+1
200 IF Y>12 THEN LET P=P-1
210 NEXT Y
220 NEXT X
230 REM DRAW WHITES OF EYES
240 LET KO=1
250 GO SUB 1000
259 REM PRINT PUPILS
260 PRINT INK 2:AT 9,P1:CHR$ 79
;AT 9,P2:CHR$ 79
270 IF P1=10 OR (P1=12 AND P2=2
5) THEN LET Q=5
280 FOR D=1 TO RND*20+0
290 NEXT D
300 LET Q=0
309 REM ERASE PUPILS
310 PRINT AT 9,P1:CHR$ 32:AT 9,
P2:CHR$ 32
319 REM BLINK SOMETIMES
320 IF P1<>9 OR RND<0.7 THEN GO
TO 380
330 LET KO=2
340 GO SUB 1000
350 FOR D=1 TO 5
360 NEXT D
370 GO TO 240
379 REM COMPUTE NEW POSITIONS (
P1,P2) FOR PUPILS
380 IF P1=6 OR P1=12 THEN LET U
=-U
390 IF FL=0 OR P1<>9 THEN GO TO
420
400 LET FL=0
410 GO TO 450
420 IF P1<>9 OR RND<0.2 THEN GO
TO 450
430 LET FL=1
440 LET U=1
450 LET P1=P1+U
460 IF FL=0 THEN LET P2=P2+U
470 IF FL=1 THEN LET P2=P2-U
480 GO TO 260
999 REM FILL EYES WITH P$(KO)
1000 PRINT AT 9,6:P$(KO):AT 9,19
:P$(KO)
1001 PRINT INK 2:AT 20,1:"THE PH
ANTOM IS WATCHING YOU"
1010 RETURN

```

- But Bolder  
(H. Rait)

LIST GROUP  
PO Box 438  
Centerport, N.Y.  
11721-0438

LIST GROUP

# 1. COMMUNICATIONS

From SUM - you'll have to consider getting rid of "call waiting" if you plan to use a MODEM to talk to one of the BBS's or services. The signal sent to your phone confuses the West-ridge Modem and may send false info to the Mainframe, as well.

Herbert W. downloaded these tidbits on the use of S-Term II.

Catalog entry: st2 info  
Opening buffer  
Upload/download

Where this manual is concerned, this is public enemy number one. There is no area quite so unclear, and we seem to get as many phone calls asking about this feature as the entire rest of the manual. The manual states, and I quote, "There is a HEX/REM conversion." We need to expand on this just a bit.

Timex MTERM has three styles of buffer conversion. HEX, REM, and NONE. Let's take a look.

The NONE should be somewhat self-explanatory. What is received from the service is what is stored in the buffer. And what is stored in the buffer is EXACTLY what is sent. You will use this style of buffer conversion when you want to download a text file from one source and upload it to another. Nothing is altered in the data at all.

The HEX mode is also simple. As each byte is transmitted from the buffer, it is translated into its two-byte ASCII equivalent. For example, the byte 1AH in the buffer would be sent as two characters, a "1" and an "A". When data is downloaded from the host, it is assumed to be in HEX format. Each character is combined with the next and one byte is made. The bytes "1" and "A", if sent from a host and placed into the buffer, would translate into the single byte 1AH. Why do this? So that you may send and receive binary (machine code) files with an ASCII buffer transmission. This will allow two Timex users with MTERM to send machine language programs to each other.

The REM mode is unique to the Timex world. Unless they have a word processing program, such as our MSCRIPT, it would be hard to create text files (such as messages for bulletin boards). There is only one "built-in" text editor on the Timex, and that is the line editor for the BASIC interpreter. This option allows you to enter lines as REM statements, load them into the buffer, and transmit them. When they are transmitted, the line number and REM keyword will be deleted. For example:

```
5 REM This is the first line.
10 REM This is the second line.
```

When this buffer is later transmitted, with the REM conversion option set, the text that is actually SENT would be:

```
This is the first line.
This is the second line.
```

The proper technique would be to load and enter MTERM and then use the "Exit to BASIC" feature. Enter the program as REM statements, and then return to MTERM with the PRINT USR command. The program should be in the buffer.

## Using the dialing menu

On pages 15 and 16, the manual attempts to describe the operation of the dialing menu. With NO explanation of the commands, it states "PICK 'A' AND YOU GET". A greatly expanded detailing is needed here.

First of all, MTERM can remember up to 14 phone numbers (with the proper serial parameters AND the macro key to transmit upon receiving a CTL-E from the host) per MTERM data file. If you wish, you may enter a phone number not on the list directly at the dialing menu, and MTERM will still dial it for you. But, to simplify matters, it is a good idea to place your phone numbers into the table.

To set an entry in this table, select the letter you wish to modify. When you select an entry, it is displayed and you are allowed to alter each portion of it separately (this allows for easy entry editing).

When you press the C key to change the serial parameters, MTERM will use whatever serial parameters are CURRENTLY SET in the system for the specific entry. For example, if you adjust the MTERM program for B,N,1 and then edit entry "D", when you press the C key, the entry will change from the default 7,E,1 to B,N,1.

The macrokey setting allows you to have more than one macrokey that will be transmitted upon a CTL-E. Other MTERM versions only sent the FIRST macro when the host sent a CTL-E. The other macrokeys had to be sent under operator instruction. This version will send the first macro (by default) when a CTL-E is received, but also allows you, on an entry-by-entry basis, to have this directed to any of the 9 other macrokeys. Note that when this option is engaged for an entry, the first macro CAN contain text. It will simply function as any other manual macrokey.

No bulletin board here

We frequently get asked whether or not MTERM will, in its auto-answer mode, function as a bulletin board. Please explain that this is not the case at all and that a bulletin board is a separate program.

## Capture buffer status display

The Smart Term II program gives you some vital information about the status of the capture buffer. Unfortunately, the manual completely ignores these. They are:

BUFTOT	Buffer total
BUFUSD	Buffer used
BUFFRE	Buffer free
BUFXMT	Buffer transmitted
	(during buffer transmission)
BUFPND	Buffer pending
	(during buffer transmission)



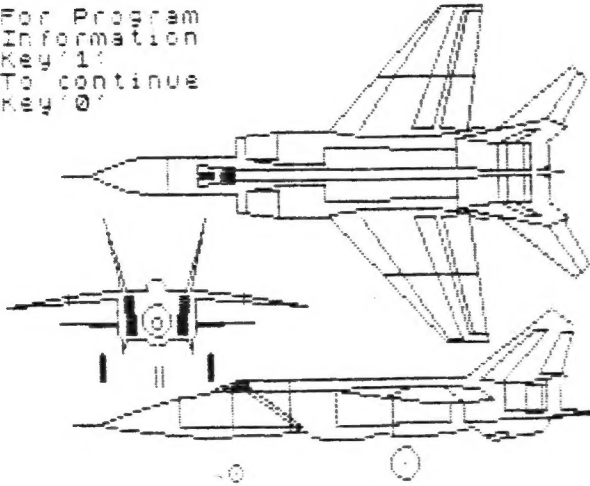
# GRAPHICS PAGE

PRINT'N'PLOTTER'S SCREEN MACHINE DEMO produced these drawings. Bob H. lent us a copy of some of the demo screens which this program can put out. If you have a "Spectrum" you might find these programs (PAINT BOX, SCREEN MACHINE) quite useful.

## PRESS RELEASE

## ZEBRA GRAPHICS SYSTEM

For Program  
Information  
Key 1  
To continue  
Key 0



**S**CREEN MACHINE compiles all text and udgs into compact machine code blocks that not only save memory space, but print much faster to the screen... It also enlarges, flips and reduces hi-resolution screens...and...

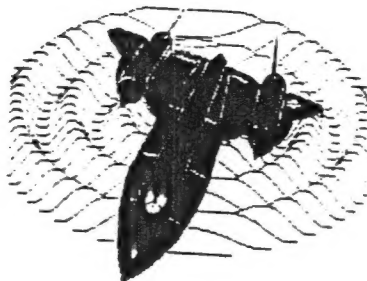


SCREEN  
MACHINE



L\_I\_S\_T GROUP

DA



10-25-84

FOR THE TIMEX  
TS2068 COLOR COMPUTER

1 - ZEBRA GRAPHICS INTERFACE

2 - ZEBRA GRAPHICS TABLET

PRICE: \$119.95

3 - ZebraPainter GRAPHICS SOFTWARE

### 1 - ZEBRA GRAPHICS INTERFACE:

- Fully compatible with the TS2068 color computer.
- Employs precision 8-channel Digital-to-Analog Converter.
- Completes over 1000 measurements per second.
- Works on the TS1000, TS1500 and TS2068. (Spectrum Version Coming soon!)
- Two Standard 6-pin DIN connectors accomodate Graphics Tablets, Analog Joysticks, and much more.
- Expansion connector allows piggybacking of other peripherals.

### 2 - ZEBRA GRAPHICS TABLET:

- Manufactured by KOALA Industries.
- Plugs directly into Zebra Graphics Interface.
- Features rectangular touch sensitive drawing area.
- Draw with your finger or with the plastic stylus supplied.
- Two control buttons for programable functions.

### 3 - ZebraPainter CASSETTE SOFTWARE:

- Fast 100% machine code software.
- Fully utilizes TS2068 advanced color display mode.
- Select Paper, Ink and Border Colors.
- Draw and Erase freehand with fine point pen or broad brush.
- Features precision circle and line entry functions.
- Keep two screen drawings in memory at once.
- Save & Load screens to cassette tape.
- Prints a screen image to your Timex printer.

### • Comes complete with:

- > Zebra Graphics Interface.
- > Graphics Tablet by KOALA Industries.
- > ZebraPainter software cassette.
- > ZebraPainter Quick Reference Card.
- > Full Documentation.
- > Zebra 90-Day Limited Warranty.

### • Related products now in development include:

- > Software support for TS1000 & TS1500 ... Our hardware works on all the Timex computers.
- > OKIDATA Color-printer interface and software support.
- > A mouse.
- > Analog Joystick Software.
- > Voltmeter.
- > Temperature measurement.

FROM 16/48 MAGAZINE

## LETTER

And to Switch back to the Standard Script type in -

9999 POKE 23605,0 POKE 23607,60  
RETURN

Here is a demo of the new character set -

! " # \$ % & ' ( ) \* + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?  
@ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ \_ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~

Good eh? But what you've got to know is that you can't see the screen  
you have to use that Backspace key (which I missed!) to clear the screen  
Your competitors (which I missed!) gave me the inspiration  
(It's remarkable by the way)  
To save press BREAK and enter in -

SAVE "Fate CLS" CODE 23400,17

And this is just one screen!

The following instructions for building a switchable ROM Module are for those individuals who are experienced at scratch building electronic projects. I have built 3 modules. Each one has operated with out a problem. If you decide to build a Module and cannot get it to operate properly, contact me in care of L.I.S.T. and I will do my best to try to assist. Lets get to it.

Open the computer case using instructions from last month's issue of L.I.S.T. and carefully remove the ROM (U16) from the socket. Place the ROM in foil or conductive foam.

Using the full size template provided, cut the PC grid board to size. Smooth all edges with a fine file.

Next step is to prepare a 28 pin, 3 level wire wrap socket into an offset socket.

Cut a small scrap of perforated PC board with 7 rows of holes.

Row 1 and row 7 must be cut along the perforations, leaving 5 rows of holes. This will become a lead bending jig.

Hold the 28 pin W/W socket with pin 1 facing away from you and to the left and all leads (pins) facing down.

Carefully bend pins 2 through 13 upwards and to the left.

Turn the socket over and place the lead bending jig, center row of holes over pins 1 and 14 and hold firm against the socket body.

Bend pins 2 through 13 upwards, aligning each pin along the perforated edge of the jig. Remove the jig and bend pins 1 and 14 down (as pins 2 through 13 were previously bent).

Lay the jig against pins 2 through 13, holding the jig firmly against the socket and bend up pins 1 and 14.

The remaining row of pins must be bent in the same direction as pins 1 through 14, however pins 27 and 15 must be used to secure the jig.

NOTE: Pin 27 MUST NOT BE BENT TO FORM AN "L". Pin 27 is used as a control select line for one of the ROMs.

Repeat the previous steps and bend pins 28, 26 through 15 to form an "L".

If the socket pins look a little irregular as to alignment, do not worry. Trial fit the socket into the PC board.

If a vise is available, place a small piece of wood between both rows of pins (bottom of PC board) and a thin section of scrap wood over the top of the socket and place in the vise. Slowly and carefully close the vise until the socket body is approximately 1/16" from the PC board.

Remove the assembly from the vise and straighten each of the 27 pins with a needle nose pliers.

Place a pencil mark at the location of missing pin 27 of the double row of pins; then remove the socket from the PC board.

Insert a stiff piece of wire (or a spare wire wrap pin) in the hole in the PC board previously marked with a pencil at pin location # 27. Bend the end of this pin to half loop (non copper side of PC board). The end of the loop should protrude through the PC board at a hole next to the pin. Solder in place.

Insert the wire wrap socket into each of its 28 respective holes on the PC board.

When satisfied with the socket pin alignment, solder each of the 28 pins to the PC board.

Using a small fine tooth file, shape the inner and outer edges of the double row of socket pins to a chisel edge.

Carefully plug the PC assembly into the vacant ROM socket (U16) to insure clearance between the ROM board and the computer sub-assembly board. Remove the ROM board and file any areas required for additional clearance between both assemblies.

Place the low profile 28 pin socket into appropriate holes on the ROM board with pin 1 (or notch) on socket facing in the same direction as the wire wrap socket and solder in place.

Using the component side diagram, insert the .01mf capacitor into the PC board and bend both leads to secure in place.

Preform the leads on both 10K resistors and insert into the PC board and bend the leads to secure in place.

Strip the insulation from a 6" length of wire wrap wire and connect to pin 28 on one IC socket. Dress the wire along the bottom of the PC board and connect to pin 28 of the other IC socket. Solder both joints. This is the +5 volt bus.

Repeat the previous step, interconnecting pins 14 on both IC sockets. Solder both joints. This is the ground bus.

Bend the leads from the .01mf capacitor and connect one lead to the ground bus and the other lead to the +5 volt bus, then solder both connections.

Connect one lead from each 10K resistor to the +5 volt bus and solder these connections.

Connect and solder a short length of w/w wire to the free end of the 10K resistor closest to the low profile IC socket and connect and solder the other end of the wire to pin 27 on the low profile IC socket.

Connect the free end of the second 10K resistor to the straight through pin (27) on the wire wrap socket and solder in place.

Solder a short length of wire to pin 27 of the double row of pins. This is the single pin soldered in place earlier. Solder the other end of this wire to a pad close to both 10K resistor leads which connect to pins 27 on both IC sockets.

Take a break and carefully inspect all soldered connections for shorts and/or unsoldered joints.

Using wire wrap wire, interconnect pins 1 through 13 and 15 through 26 on both IC sockets, then solder in place. TAKE YOUR TIME and be careful not to create any solder bridges between socket pins. (Pin 1 on one socket connects to pin 1 on the other socket.....and so on).

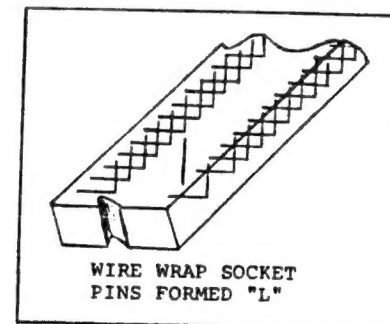
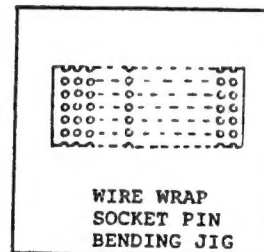
Connect and solder an 8" length of wire at the junction of one 10K resistor and pin 27 of an IC socket.

Repeat previous step for the other 10K resistor/pin 27 junction. Solder the free ends of the wires to the outside pins on the SPDT toggle switch. One wire to the N/O pin, the other to the N/C pin.

Connect and solder an 8" length of wire to the solder pad with a wire connecting to pin 27 of the double row of pins. Connect and solder the other end of this wire to the center pin on the switch.

Again, INSPECT ALL solder joints for any shorts. Use an ohm meter to check continuity of all parallel joints and between all socket pins.

If all is OK, insert the ROM board into a conductive foam pad. Carefully place one ROM IC only into any one IC socket on the ROM board.



Carefully insert the ROM board assembly into the vacant ROM socket (U16) of the T/S 2068.  
Dress the wires from the toggle switch into the computer cartridge section to avoid a possible short circuit.  
Replace the top of the computer case. Do not replace the screws at this time.

Connect the power cable and video cable into the computer.  
Apply power to your TV and activate the computer switch "ON".  
If all is well, the copywrite message will appear on the TV screen.

If vertical lines appear on the screen, turn the computer off, flip the toggle switch to the opposite position and activate the computer switch again.

If everything is OK, turn off computer power, raise the top of the computer case and insert the other ROM IC into the vacant socket on the ROM board.

Drill a hole in the back of the computer case and install the toggle switch.

Reassemble the computer case with all hardware.

Flip the toggle switch to the opposite position and activate the power switch on the computer.

The copywrite(s) should appear on the screen on your monitor.

Parts required: 1 each unless otherwise noted

Conductive foam pad.....Radio Shack 276-2400

Multi-Purpose Plug-In Breadboard.....Radio Shack 276-155

Low Profile 28 pin IC socket.....Radio Shack 276-1997

Wire Wrap Wire.....Radio Shack 276-501

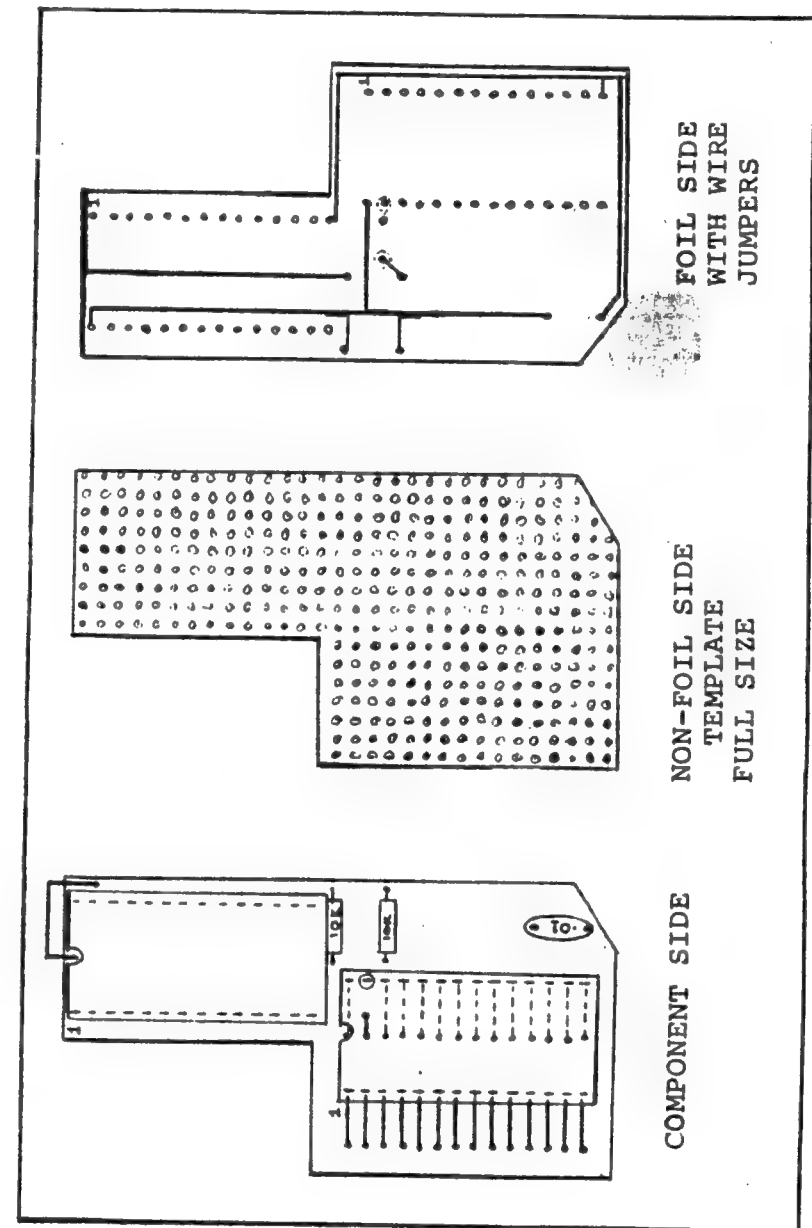
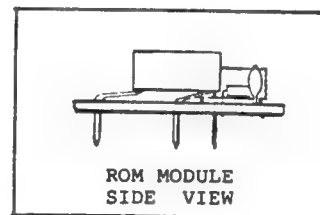
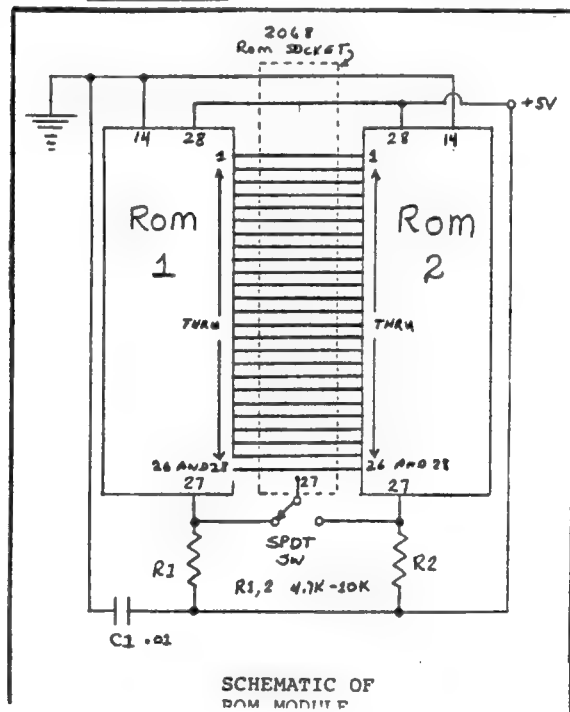
.01 Disc Cap.....Radio Shack 272-131

2- 4.7K - 10K, 1/4 W resistors.....Radio Shack 271-1335

Sub Mini Toggle Switch SPDT.....Radio Shack 275-326

Wire Wrap socket, 3 level..DIGI-KEY, Highway 32 South, PO box 677, Thief River Falls, MN 56701

Happy Soldering.....Bob Gilder



LIST GROUP

# SPECTRUM

Here is a list of programs and an indication of their system compatibility. We have taken every precaution to insure accuracy. But Enter Lengua has NOT been able to RUN every program listed below: you may be able to make a program work that we think will not work with a given system and vice versa.

## 2048 COMPATIBLE PROGRAMS

No need for an Emulator or a ROM but will RUN with both  
(courtesy of Bob Lussier, Steve Nyatt)

JACKPOT, Computer Rentals Software  
THE NIGHT SKY, Bridge Software  
PENTA-CUBE, Asp Software  
MANIC MINER (BREAK loader and change CLEAR to 28000)  
MONITOR 48  
DARTS GAME  
ZEDNEBBY (from Your Computer)  
MYSTERY MANOR

DONINOES, Microsega Software  
SPECTROGRAPHICS, Bridge Software  
BLACK CRYSTAL, Cornell Software  
MASTER CHESS  
SLICKER PUZZLE  
GRAPHICAL GOLF (from Your Computer)  
HALLS OF THE THINGS  
EDITOR ASSEMBLER, Picturesque

About 50% of SUPERCODE will work without any help from Emulators or ROMS.  
In many cases small changes to a program will make it work, such as the change for Manic Miner.  
And there are many more titles that will work directly since there are now more than 4000 Spectrum programs.

## EMULATOR MAY WORK; ROM WORKS FINE (courtesy of Jon Williamson, FOOTE Software)

CARCARE 50 GAME TAPE (EY.95)  
MICROPRINT 83

POOL (E5.95), Bug-Byte  
SUPER SOCCER

## NO SUCCESS YET WITH OUR EMULATOR (Issue III ROM may work)

SPECTRUM MASTER TOOLKIT WITH REALTIME CLOCK, available from Hang Wild Software, U.S.A.--some of this will run with the EMULATOR  
THE FOREST, Phipps  
PANIC, PSS

BLUE THUNDER, Wilco

ISSUE III ROM-ONLY PROGRAMS, THERE DO NOT WORK CORRECTLY WITH OUR EMULATOR  
(courtesy of Bill Russell)

SPECTRUM VOICE CHES  
ETI (ET with voice)

BIRDS AND THE BEES  
ADVANCED GRAPHICS FOR THE 28 SPECTRUM

NEITHER ISSUE III ROM NOR EMULATOR WILL RUN THESE PROPERLY

CHEQUERED FLAG (E6.95), Psion  
PSEUDOSPINTS from YOUR COMPUTER magazine

PENNY (E5.95), Micromania  
DRAC MAN (from Your Computer)

ISSUE III ROM WILL NOT WORK  
(Emulator may work)

PSST  
CYRUS CHES  
HEATHROW

SCUBA DIVE (Emulator works fine)  
JUNGLE FEVER

If you wish to contact other sources of emulation here they are:

G. RUSSELL ELECTRONICS, 801 Box 539, Centre Hall, PA 16828 (814)344-1325. Manufacturer of ROMSWITCH.  
GAMES TO LEARN BY, Inc., P.O. Box 575, 2 South Street, Williamsburg, VA 01096 (413)248-7505. ROMSWITCH.  
PHEONIX ENTERPRISES, 1780 N. DuPont Hwy., No. 17, Dover, DE 19901 (302)734-0179. Spectrum ROMS.  
FOOTE SOFTWARE, P.O. Box 14635, Gainesville, FL 32604 (904)462-1086. Spectrum ROMS.  
THE JOHN OLIVER Co., 11601 Whidbey Dr., Cumberland, IN 46229. Manufacturer of general purpose cartridge boards, EPROM blowers, expansion boards, etc.--all in kit form--for your 11TS or 2048.  
COMPUTERS OF HIGHWAY STREET, 87 Wigmore St., London W1N 9SA, England. Attn: Mike Selin or Alex Hills. Reliable and fast exporters of Spectrum ROMS.  
List Associates, 10 Idle Day Drive, Centerport, New York 11721  
Has limited quantities of Spectrum ROMs

## EMULATOR WORKS FINE (Issue III ROM may work, too)

SUPERCODE (EY.95), CP Software  
ATAC ATAC  
BATTLES, Spectrum version, M. Rozeng  
10 LITTLE INDIANS  
LORDS OF MIDNIGHT  
ZEDNEBBY (from Your Computer)  
CROSS (from Your Computer)  
16/48, a magnetic magazine, all of last three issues work fine except for 1 program using keyboard  
GEOGRAPHY I, Kesselt  
THE SOLAR SYSTEM, EagleSoft  
SNAKE PIT, Postern  
STARGAZER SECRETS, CIL  
SCUBA DIVE, Burrell  
QUICK COOK II, PICS  
3D TUNNEL, New Generation  
16/48, all of August issue  
SPECTRUM EXTENDED BASIC (EY.95), CP Software  
SCRABBLE (E14.95), Psion  
BRIDGE, PC Software  
BULL (E14.95)  
3-D TANKS, Microtronics  
SHIFTY  
SPECTRUM TAPE COPIER  
TERADACKTIL  
CODE NAME MAY  
LUNAR JET MAN  
TASWORD TWO  
FANTASIA  
NAZE DEATH RACE (ADR)  
GALACTOIDS (from Your Computer magazine)  
DICTATOR (E6.95), Microtronics  
3-D STRATEGY (E19.95), Quicksilver  
TIMEGATE (E19.95), Quicksilver  
GAMES DESIGNER (E29.95), Quicksilver  
LASERZONE (E19.95), Quicksilver  
THE CHESSPLAYER (E19.95), Quicksilver  
AQUAPLANE (E19.95), Quicksilver  
FRED (E19.95), Quicksilver  
RINGSIDE BIGGOS' THE SHOWMAN (E19.95), Quicksilver  
DUNGEON MASTER (E7.95), Crystal  
DRACLES' CAVE (E7.95), Oric  
GAMES 84 (E19.95), Quicksilver  
MANIC MINER (E5.95), Software Projects  
TUTANAMUN (E5.95), Micromania  
LEARNING BASIC PROGRAMMING ON THE SPECTRUM, Logic 3  
SPECTRUM FORTH--Interq--(E19.95), CP Software/Hang Wild  
SPECTRUM FORTH (E29.95), Aberneth/Hang Wild  
NIGHTFLITE, Hewsons' Consultants/Hang Wild  
QUEST, Hewsons' Consultants/Hang Wild  
FIFTH, Richard Taylor  
THE HOBBIT (E14.95), Sinclair Research  
EASY SPEAK, Quicksilver  
GRINDRUNNER, Quicksilver  
FRENZY, Quicksilver  
SPACE INTRUDERS, Quicksilver  
TRANSYLVANIAN TONER, Richard Shepherd  
SHIP OF THE LINE, Richard Shepherd  
URBAN UPSTART, Richard Shepherd  
MATHS I, SciSoft  
JUNGLE MATHS, SciSoft

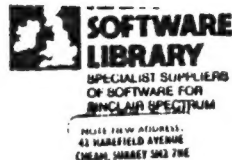
JET SET HILLY  
GAMES HALF  
SHIP OF DOOM, Adv. C  
COLLOSSAL ADVENTURE  
PRINTING  
BALLOONS (from Your Computer)  
SINCLAIR MONITOR AND DISASSEMBLER  
ZARIAN, Starzone  
GUITAR TUTOR, Harlequin  
EYE OF THE STAG HARRISON, Sunbeam  
POWER-SANDIT, Pinnacle  
WHOLEFOODS I, PICS  
CONTINENTAL III, PICS  
SPECTRUM COMPUTING CASE. MAGAZINE, ADP  
SPECTRIST, a word processor  
3-D TANK JUEL, Real Time Software  
METEORINGS, Quicksilver  
SPAWN OF EVIL, Microtronics  
FLIGHT SIMULATOR, Psion  
HI RISE HARRY  
BAMNEY BURGERS  
Spectrum Computing magazine TAPE  
CHOPPER RESCUE  
GROUCH  
LAST SUNSET FOR LATTICA  
TYPESET, Micro Kraft  
TOWERS  
FORTH (from Your Computer magazine)  
FIFTH, Richard Taylor  
ANT ATTACK (E6.95) (E19.95), Quicksilver  
NIMED OUT (E19.95), Quicksilver  
DRAGONSLANE (E6.95) (E19.95), Quicksilver  
SMUGGLERS' COVE (E19.95), Quicksilver  
BUGABOO (E19.95), Quicksilver  
VELNOR'S LAIR (E19.95), Quicksilver  
CYBIRD ASSAULT (E19.95), Quicksilver  
JASON (E19.95), Quicksilver  
LUNA CRABS (E5.95)  
TRAIN GAME (E5.95) Micro Sphere  
SPECTRUM MONITOR (E7.95), Picturesque  
EVEREST ASCENT, Richard Shepherd  
GOLF (E3.75-E6.95), various companies  
SPECTRUM EDITOR ASSEMBLER (E8.50), Picturesque  
WHITE LIGHTNING (E14.95)  
SPECTRUM FORTH--F.P.--(E44.95), CP Software/Hang Wild  
COUNTRIES OF THE WORLD, Hewsons' Consultants/Hang Wild  
3-D SPACE WARS, Hewsons' Consultants/Hang Wild  
SPECTRAL PANIC, Hewsons' Consultants/Hang Wild  
MICRO PROLOG (E24.95), Sinclair Research  
Most Spectrum programs in British magazines will run  
TRAM, Quicksilver  
METEOR STORM, Quicksilver  
WORD PROCESSOR, Quicksilver  
CENTI-BUG, Microtronics  
INVINCIBLE ISLAND, Richard Shepherd  
DEVILS OF THE DEEP, Richard Shepherd  
CASH CONTROLLER, Richard Shepherd  
MATHS II, SciSoft  
THE BIZARD'S BOB, SciSoft

ENTER LENGUA  
Computers in Education  
206 James St., Carrboro, NC 27510

Donna F. Dowey

Douglas T. Dewey





## LETTERS TO LIST

Mr P Donnelly  
LIST Group  
Lung Island  
Centerport  
NEW YORK 11721  
USA

25 June 1984

Dear Mr Donnelly,

Thank you for your letter dated 8 June 1984.

You express interest in our Pascal compiler on the Times 2068. We intend to make the Pascal available on the Times 2068 before the end of this year. We are planning to do this modification in house, here in England, and we would be happy to inform you as soon as this conversation has successfully taken place.

I hope this information is of use to you and, hopefully, we shall be contacting you again soon.

Yours sincerely,

United Methodist Church  
MILTONSCHURCH, HANOVERSTRA  
MILTONSCHURCH, HANOVERSTRA

P.J. Donnelly,  
Centerport,  
New York  
11721  
U.S.A.

Dear Mr. Donnelly,

Thank you for your enquiry. I'm sorry for the slight delay in replying but we always concentrate on dispatching the tapes before we answer the other mail.

I enclose two catalogues and other forms etc. We have a few machines in U.S.A., but the main problem is the cost of postage of mailing costs. We dispatch the tapes by Air Mail, and charge the other U.S. postage on inclusive charge of \$5 (US) to this 3 tapes. Although we charge the same with a return date, we don't allow rights to this date and you may keep the tapes for 2 weeks after you receive them.

At present, we don't accept payment by credit cards, although this is a possibility for the future, but advance payments are welcome to reduce our costs.

We haven't really thought about a licensing of franchise program, but are always open to suggestions.

Yours sincerely,

Chris  
Gillian Osip.

Nov. 1, 1984

Gentlemen,  
PLEASE SEND ME A SINCE NEWS-  
LETTER AND ALSO TAPES LIBRARY  
(PUBLIC DOMAIN), TO THE FOLLOWING  
ADDRESS - R.B. S.  
50

Chris

Dear, L.I.S.T  
Would you please  
send me a trial  
issue of your news-  
letter, I have inclos-  
ed a S.A.S.E.

Thank You  
Chris

P.S  
I have a Times  
2068.

Syosset, NY 11791  
Nov. 3, 1984  
L.I. Sinclair Times Group  
Centerport, NY 11721

To whom it may concern,  
I purchased a TIMEX 2068 a few months ago in order to help me with a course in programming. I was taking in programming Education at Syosset High School at night. I bought my computer because I thought my teacher said that we should practice on anything because I or 2 hours on the school computers would not be of much help to us.

That was a few months ago and I am now repeating the course with another teacher to see if I can get more out of it. During the summer I got my hands on as many books as I could on my machine and did the best I could to learn about my computer.

I am still in the learning process and after writing away to different firms around the country, I managed to get some information and ordered a few things.

I found that I had very little support around the island. In fact none at all. No one really had any interest in the Timex. So I've been doing things on my own.

I happen to love the Sinclair Basic as compared to the others that I've seen around and am using it. It is a shame that not too many people are acquainted with it. It is fast entry and I love the way the 2068 won't let you make a mistake... it is just incredible!

I recently obtained a word processor from Curry called Texturiter and am going to use it. It prints out all my letters on it and love it. It prints out on my little Times 2068 Printer and gives me a hard copy. It is not the best one in the world but for now it will suffice until I get a larger printer and more peripherals.

Which brings me to the reason I'm writing to you...

Eduardo D.R. - Rivadavia n°34 - (726) SALADILLO -  
Pcia.de Buenos Aires-REPUBLICA ARGENTINA-

Dear sirs,

I have read your address in a magazine and I am interested in your club. My name is Eduardo Daniel R., and I am in the User's Saladillo Group.  
I would like to know how you work; IE I want to exchange information, programs and mail. The group I mentioned above, is recently formed and it has got few members but I suppose it will be bigger in the future. We are developing investigations.

I was at the Exposition at the Coliseum in Nassau yesterday and I got a copy of the Computer Shopper and subscribed to it for a year. In it they have a Timex Survival Column for the Timex Sinclair people and that alone is worth the price.

I saw your name in the Users Groups listings and am writing to you. If a phone no. would have been in the listing, I would have called you.

I recently retired and am very happy up on computing. Since I expect to get many other peripherals for my machine, I would like to find others that share similar interests. The Long Island Computer Association was present at the Exposition and gave me some literature on their club, but were rather vague on their support of the TS computers.

So rather than start with them, I would sooner get with a bunch of people that really have the Timex computers at heart.

I recently got a whole batch of stuff from different suppliers around the entire country. Enough to make you go dizzy trying to figure out which will work with what!

That is why I am writing to you. Please send my all the info on your group and perhaps I can get to meet you all in the near future.

If you would like to phone me I would even appreciate a call at 921-5129. If I can't answer the phone, please leave a message on my answering machine.

Thanks for an early response.

Yours truly,  
Eduardo D.R.

Buenos Aires,  
20th October, 1984.

Dear Paul,  
Thanks for copy of L.I.S.T.  
I have written a number of newsletters  
and I'm waiting for their samples.  
If you are the first to reply  
which is in your favour. I'll put  
on know by Jan 1st.

Lee B

I write for "T-S Horizons" magazine, doing  
Reviews and a Telecommunications Column. I also  
Run a T/S BBS "RIVER CITIES" AT 304/652-1416.  
Please place me on your mailing list for  
your newsletter, and send me any back issues you  
may have for my files. If you would like, I will  
mention your newsletter in a future issue of  
"T-S Horizons".  
Thank you for your help

Bill F

Dear Mr. Donnelly,  
I saw your listing in the "T-S Horizons" magazine.  
I am enclosing a large S.A.S.E. Please send me further information  
concerning your user group.  
Thank you.

Mr. C. S. Jr.  
Rivadavia n°34

West Covina, Ca. 91790  
October 26, 1984

LIST  
P.O. BOX 438  
CENTERPORT, N.Y. 11721 0438

Dear Paul,

Glad to read in newest LIST that the Round table #3 made it home and that my Print 'N Plotter "PAINTBOX" was a hit at the meeting.

The edge connector diagram was a surprise, as I had just made an almost identical one in trying to rewire my EURO-ELECTRONICS "LLPRINT III" for the 2068. The interesting part is that the 2068 was made compatible to the ZX-81/TS-1000, while the Spectrum is NOT!

Enclosed are a full demo tape from Print 'N Plotter ready to run on 2068, then for the best you have to put in "Spectrum Emulator", and load rest of tape...Load Program "1" and follow start - stop instructions. (Took me two days to record this...if programs are not loaded in sequence, some variables are missed, leading to loading errors. Sometimes a loading error without a line number will be okay if you stop tape and GO TO 1.) Generally tape errors mean not enough volume as this is a tape copy after editing...a stereo channel R only!

The second enclosure is my EP-44 data for ZX-81 if I didn't send it before. I would like any info on EP-44 that Heinz has on commanding his EP-44. Aerco has promised my RS-292 in "two weeks" flat. I may get my LLprint III working sooner. I have an RD Tracer for Spectrum...I think all it will take for 2068 is an external 12 volts. (This is how it knows its on Spectrum and not ZX-81) but 2068 doesn't provide 12v...will cut edge connector plug to insert 12v externally where 2068 has "reset".

The 2068 tape signal is fussy about distortion as it is not clipped as is the ZX-81. A stereo track will not recognize titles do to phase shift...record only right and works okay for tape copy. I use right channel as left is near tape edge and more subject to damage.

Sincerely,

*Bob H*

Bob H WA6DLI

P.S. Last issue LIST much more legible!

LIST.

DEAR SIR,

I WAS VERY PLEASED WHEN I RECEIVED THE SAMPLE 5/84 ISSUE OF THE LIST GROUP PUBLICATION. A REPRESENTING VIEW AFTER WITHHELDING THE CONTRASTING MASS DESERTION OF SUPPLIERS AND PUBLISHERS FROM THE SINCLAIR MARKET.

I WOULD LIKE TO BECOME A MEMBER OF THE GROUP AND MY DUES CHECK OF \$12.00 IS ENCLOSED.

THANKS - SINCERELY YOURS

P.S. I WOULD BE POSSIBLE TO HOOK UP A BROTHERS EP-44 TYPEWRITER PRINTER TO A PARALLEL PORT. INSTEAD OF RS232C. JERRY HAS.

West Covina, Ca. 91790  
September 8, 1984

Dear Sir:

This programed from memory of EP-44 to answer inquiries on EP-44 ZX-81/TS-1000/1500 connections.

Here is the info on MY setup. It will be exact for CAI Serial I/O and may be helpful for others. For Sinclair type computers the interface must provide two features: 1) Sinclair code to ASCII code conversion, and 2) Fok expansion to full ASCII words.

MY Interface is the CAI I/O Board with Eproms for the Stringy-Floppy wafer tape storage and Serial Printer. My last address for CAI was:

CAI INSTRUMENTS, INC.  
P.O. BOX 2032  
Midland, MI 48640  
Tel. (517) 687-7343.

For the EP-44 I wired the DB-25 Plug to the printer as shown in the CAI Manual:

in 20	-----DSR-----	1 (CAI Board)
in 4	-----CTS-----	2
out 6	-----DTR-----	4
in 2	-----SDI-----	5
out 3	-----SDO-----	6
out 5	-----RTS-----	8
7	-----ground-----	9

The baud rate and parity should be set as shown in the EP-44 Computer Applications Manual for Atari & Commodore, namely:

BAUD RATE	75
BIT LENGTH	7
PARITY	Z
NEW LINE	CR
CODE	8 BIT
ER	Y

(Set EP-44 line space to 1)

The interface has to be set to 75 baud by typing the following into the computer and running it:

10	LET ACE = 14336 (memory location in ACE)
20	POKE ACE+3,128 (set Baud)
30	POKE ACE,108 (LSW of Baud divisor)
40	POKE ACE+1,10 (MSW of Baud divisor)
50	POKE ACE+3,3 (set word length to 8)
60	POKE ACE+4,3 (set RTS & DTR)

The CAI Manual gives the USER calls for LList etc., so your own interface should do the same. The CAI book did not show anything below 110 baud so the little program above sets 75 baud, which worked better than 110 baud.

#### NEWSLETTERS - BACK ISSUES

If you are a fully paid member for 1984 (Feb. 1, '84 to Jan. 31, '85) and do not have all your back issues, please drop us a line. Our records show that all full-year members should have all issues back as far as July '84, but prior issue data is missing.

You might want to include a short hint or tip, program, or article for the newsletter with your response. Please don't ask for a second copy if you already have one and please don't request back issues if you are not a fully paid member. We are sorry for the inconvenience.

25A to Vernon Valley Road, go south to Friendly's (pass the Post Office)  
Go left on Alerton and then 1 block to a "T" Intersection  
Go left on Carrington and follow it to Dartmoor - 9 Dartmoor is shake shingled ranch,  
just past the fire hydrant on the left.

"MEMBERS ONLY"

PAGE



## Timex Sinclair Users Group

### Mile High Chapter

#### PROGRAMMING TIP FOR OCTOBER

Do you have a program that Auto runs and is in machine code so you can't  
BREAK it? Here's a way to stop Auto-run. In the immediate mode type this:  
SAVE CHR\$ "USR 832" name.  
This will first LOAD the named program and then immediately start to SAVE.  
Press BREAK at that point. This stops the SAVE and allows you to see how the pro-  
gram gets into machine code. Here is how it works: USR 832 calls the ROM LOAD  
subroutine and the two quotes hold the program name. You can also type "" with  
no program name. After loading the USR call RETURNS to BASIC to finish the line,  
evaluating to zero. CHR\$ changes the zero into a string. The line then reads:  
SAVE " " CHR\$ of 0 is a space and the computer SAVES the program.

Thanks to SYNTAX for this programming tip.



#### FAMILY COMPUTING

#### Timex Sinclair 1000 & 1500/Santa Claus

```
10 FAST
20 FOR B=0 TO 21
30 FOR P=0 TO 31
40 LET C=128
50 IF B>17 AND P>20-B AND P<0+11 THEN LET C=10
60 IF B>11 AND B<22 AND P>6-(B<14) AND P<25-(B<14) THEN LET C=134
70 IF B>0 AND B<8 AND P>9 AND P>14-B AND P<19-B THEN LET C=136
80 IF B>9 AND B<12 AND P>18-B AND P<0+12 THEN LET C=13
90 IF B>5 AND B<12 AND P>9 AND P<21 THEN LET C=0
100 IF B>11 AND B<16 AND P>0-2 AND P<32-B THEN LET C=B
110 PRINT AT B,P;CHR$ C
120 NEXT P
130 NEXT B
140 PRINT AT 9,15;"V";AT 8,26;CHR$ 151;AT 11,15;CHR$ 1
150 SLOW
160 LET CO=0
170 PRINT AT 7,13;CHR$ (21+CO*2);AT 7,17;CHR$ (21+CO*2)
180 PRINT AT 11,16;CHR$ (131+CO*3);AT 11,16;CHR$ (131-125+CO)
190 LET CO=1-CO
200 PAUSE 140*HMD*80
210 GOTO 170
```